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Understanding Implementation Variables: Interviews with School SLPs Who Work with
Children Using AAC


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**ABSTRACT**

Over 90% of individuals who use augmentative and alternative communication (AAC) leave high school with limited or no literacy skills. A number of intrinsic and extrinsic challenges are likely to contribute to low literacy rates. Yet, access to, and implementation of, quality adapted literacy instruction is one way to improve outcomes. Previous research regarding speech-language pathologists (SLPs) views on AAC literacy implementation and instruction is limited; however, there have been previous successes and challenges in delivering literacy instruction for those using AAC. This paper will focus on understanding implementation variables by interviewing with school SLPs who work with children using AAC. Six main questions guided this study, based on Proctor's Implementation Outcomes Framework (2009), including: (a) "What makes a curriculum acceptable?"; (b) "What makes a curriculum feasible?"; (c) "What makes a curriculum adoptable?"; (d) "What makes a curriculum appropriate?"; (e) "What makes it that you can implement a curriculum with high fidelity?" ; (f) "What fosters sustained use of a curriculum?". Use of an implementation science framework can inform curriculum development and needs by potentially providing a richer and more specific understanding of what makes current curriculums acceptable or unacceptable, feasible, and why they were adopted. This framework informs what would make future curriculums acceptable, feasible, and adoptable as well. By attaining information through lived experiences, we can potentially create usable innovations and interventions that better fit the needs of real-world contexts and include experience and voice of those who have to implement adapted literacy daily.

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**Chapter 1**

**Introduction**

According to Beukelman & Light (2020), approximately 5 million Americans, and 97 million individuals in the world, may benefit from the use of augmentative and alternative communication (AAC). AAC is a form of communication support used to supplement or compensate for impairments in people's speech production and/or comprehension; thus, individuals use AAC devices to help with spoken and written communication. There are a variety of AAC tools that a person can use, such as: gestures, manual signs, finger spelling, line drawings, picture communication boards, speech-generating devices, and more (ASHA, n.d). These tools are beneficial for those who have complex communication needs (CCN). People with CCN experience communication difficulties across some or all partners and often have a restricted range for things they can successfully communicate about (e.g., may be able to communicate with speech successfully to request preferred items but not share about their day or ask questions). People with CCN have different diagnoses including but not limited to autism spectrum disorder (ASD), intellectual disabilities, brain injuries, cerebral palsy, etc. (Beukelman & Light, 2020). Access to AAC allows individuals with CCN to effectively communicate their needs, wants, feelings, and preferences to a listener (Beukelman & Light, 2020).

*Literacy Acquisition*

In addition to being able to speak and comprehend language, it's also important to have literacy skills, such as being able to read and/or write. Literacy is an important skill for everyone, including individuals with CCN using AAC. Literacy skills can provide access to increased educational and vocational opportunities, better access to mainstream technologies, and greater

options for independent living (Caron & Light, 2016). In the beginning stages of successful

literacy development, children learn about print and books and then develop their language and

phonological awareness skills to support literacy development. Many of the foundations for

successful literacy development are established well before formal reading and writing

instruction in school (Light & Kent-Walsh, 2003). Being a successful reader is a complex task. It

requires the integration of many skills and concepts, including knowledge and application of

alphabetic principle, phonemic awareness, and background knowledge/vocabulary (Snow, 2006).

Proficient literacy skills allow for support of learning of new information ("Literacy

Development in Children," 2022). Without basic literacy skills, the individual will not be able to

do these fundamental activities and have difficulties exploring and expanding language and are

restricted in participating in the world around them.

*Literacy & Individuals using AAC*

Despite the documented importance of literacy, only 10% of individuals who use AAC

enter adulthood with functional literacy skills, likely due to the lack of exposure and direct

instruction in literacy that occurs (Yorke et. al, 2020). Literacy skills are arguably even more

important for people with CCN who use AAC, as literacy skills allow AAC users to use

language generativity in order to precisely express their ideas to a listener through orthographic

systems like typing and text-based displays (Yorke, 2017). When individuals with CCN don't

know how to read or write, pictures are often used to express objects and concepts on AAC

devices with a very limited set of vocabulary for the individual. With literacy skills, individuals

who use AAC have the freedom to communicate their thoughts in a limitless and more precise

manner (Light, Kelford Smith, 1993). Literacy for people using AAC provides these individuals

access to higher education opportunities, certain technologies, wider employment opportunities,

more social relationships (e.g. texting, social media), the assertion of independence, self-advocacy, and participation in the community (Copeland, Keefe, & Luckasson, 2018; Light & McNaughton, 2012). However, as mentioned previously, outcomes related to literacy for those who use AAC is quite poor. Research demonstrates individuals who use AAC can learn to read, yet there are many barriers (both intrinsic and extrinsic) to the acquisition of literacy for those with CCN who use AAC.

*Challenges for Individuals using AAC (intrinsic factors)*

Intrinsic factors that can negatively impact an individual with CCN's ability to decode written text include impairments in visual, hearing, motor, language, cognitive, and speech skills. Given these common impairments, traditional literacy education can be difficult for the individual and can restrict their ability to easily communicate independently (Wagner & Hanser, 2020). Adaptions to a traditional literacy program must be made in conjunction with their skills and unique intrinsic challenges (e.g., low vision, limited hand mobility) in order to create a successful literacy experience. A common barrier to literacy instruction is the emphasis on oral production to participate in instruction. Traditional literacy instruction typically focuses on the student's ability to produce sounds that letters make. From the beginning, early literacy learning tasks need to be modified (e.g., instructor makes the sound for the letter, student points to the letter vs. making the sound). Consistent access to and appropriate adapted instruction are important for those with CCN in order to build their communication skills and to develop vital early literacy skills (Light & McNaughton, 2013).

Limited motivation is another intrinsic factor that presents as a challenge. Presenting young users of AAC with meaningful opportunities, with relation of sounds and words to personal experiences and relevant vocabulary context knowledge, will aid in building future

literacy skills and recognizing the importance of reading and writing (Light & McNaughton, 2013). For example, developing personalized content for the individual with CCN, by including topics of interests and pictures of themselves and family, can help with increasing motivation. Targeted programs for the individual, such as those with motivating activities, explicit instruction, and adapted materials, give them the support they need for literacy success to counter some of the intrinsic challenges many people who use AAC face (Caron et al., 2022; Light & McNaughton, 2013).

*Challenges for Individuals using AAC (extrinsic factors)*

In addition to intrinsic factors, extrinsic factors related to the environment also influence the individual's ability to learn literacy. Extrinsic factors that will be discussed are the following: teachers' views on AAC, the lack of education training teachers have on AAC literacy, the adaption of curriculums that needs to occur for each AAC user-student, and the lack of AAC literacy curriculums. According to Ruppar (2017), teachers are unaware of strategies used to provide grade-aligned literacy instruction to those with significant disabilities. Teachers also express skepticism that academic literacy instruction should take priority over life-skills that they could use in the future. This skepticism on whether to make academic literacy a priority comes from the limited knowledge these teachers have about the importance of literacy for those using AAC. Because these teachers also have a lack of knowledge on how to educate individuals using AAC, teachers struggle with presenting material and believing that the material will yield success (Ruppar, 2017). Many times, special education teachers will focus on educating their students with life-skills, rather than understanding literacy. Consequently, teachers are taking away the opportunity to allow their students to reach their full literacy potential outside the classroom. Teachers do this because of their lack of education on how to teach literacy skills to

individuals using AAC, and because teachers look at the students' cognitive ability to determine whether the student should have access to literacy instruction. With this mindset, teachers are denying their students the opportunity to learn literacy because they're basing their decisions about access on stereotypes of the students' characteristics (Ruppar et al., 2011). Equally important, each child needs an individualized program to meet their needs and abilities, which is something that teachers can fail to recognize as well. Every child presents different challenges; therefore, different curriculums and/or adaptations are needed to successfully teach literacy to individuals with AAC (Caron, O'Brien, & Weintraub, 2022). There's a lack of knowledge to teachers on how to understand and successfully implement AAC literacy curriculums, yet when provided with learning and training opportunities, teacher demonstrate they can learn and implement lessons with high fidelity, as seen in the study with Caron and colleagues (2022). In addition, there are limited types of AAC literacy curriculums out there, so teachers are obligated to work with the limited resources they have.

*Implementation Framework*

Implementing changes to extrinsic factors – such as teacher preparation, lack of access to adapted literacy materials – is one way to potentially improve the low literacy rates of AAC users. A better understanding of literacy implementation variables, such as what factors make literacy curriculums adoptable and accessible to those implementing, are important steps in developing solutions to current barriers. Implementation science outcomes (Proctor, 2009) can aid in understanding factors contributing to implementing new treatments, practices, and services. Proctor's model (2009) positions implementation outcomes to precede service and client, meaning the implementation outcomes affect the latter. After determining what factors persuade an individual to adopt a curriculum, figuring out if it's successful with the client and in

service is the next step. Table 3 identifies a construct from the implementation outcomes

framework (Proctor, 2009) and provides a conceptual definition based on the literature.

There's often a gap between what happens in research and what happens clinically

(Olswang et al., 2015). This is evident in the area of adapted literacy instruction for learners who

use AAC (Yorke et al., 2020). In attempt to close this gap, stakeholders' involvement from the

beginning, which includes sharing their lived experiences with implementation of adapted

literacy instruction and challenges with current curricula options, can inform research and

development. Adoption of a usable innovation (i.e., a new literacy curriculum for AAC learners)

will not occur if there is not an understanding of what is needed. By attaining information

through lived experiences, we can potentially create useable innovations and interventions that

better fit the needs of real-world contexts and include the experiences and voices of those who

have to implement adapted literacy daily.

**Chapter 2**

**Study Aims**

Previous research regarding SLPs' views on AAC literacy implementation and instruction is limited; but, it has demonstrated previous successes and challenges related to delivering literacy instruction for those who use AAC (Caron et al., 2022; Ruppar et al. 2017). Use of an implementation science framework can inform curriculum development and needs by potentially providing a richer and more specific understanding of what makes current curriculums acceptable or unacceptable, feasible, and why they were adopted. This framework also informs what would make future curriculums acceptable, feasible, and adoptable (Proctor, 2009). Therefore, the study aimed to better understand the literacy curriculums SLPs (and their schools) have access to, why they use them, what they wished they had, or what was missing from these curriculums. Six main questions guided this study, based on Proctor's Implementation Outcomes Framework (2009), including: (a) "What makes a curriculum acceptable?"; (b) "What makes a curriculum feasible?"; (c) "What makes a curriculum adoptable?"; (d) "What makes a curriculum appropriate?"; (e) "What makes it that you can implement a curriculum with high fidelity?" ; (f) "What fosters sustained use of a curriculum?".

**Chapter 3**

**Methods**

*Research Design*

This study used a phenomenological qualitative research design using semi-structured interviews. A phenomenological qualitative research design explores individuals' experiences of the world and of phenomena (Neubauer et al., 2019). It gathers perceptions and deep information through inductive and qualitative methods, such as interviews in order to represent the perspective of the research participant(s) (Lester, 1999).

This study implemented semi-structured interviews in order to acquire information about the participant's experiences. A semi-structured interview is a qualitative data collection strategy where participants are asked predetermined questions, but are permitted to answer it open-ended (Given, 2008). The semi-structured interview followed a predetermined written interview guide. This interview design allowed for explicit and comprehensive data to be collected about the experiences that SLPs have had with literacy curriculums for children with AAC in the school systems. Gathering this data allowed the researchers to investigate the lived experiences of these SLPs involved with literacy implementation and to find the underlying commonalities between the experiences. These commonalities later became themes in the study.

*Participants*

Ethics approval was obtained from the Pennsylvania State University for Research Protections prior to the start of the study. Purposeful and snowball sampling (Palinkas, 2015; Naderifar, 2017) were used to recruit participants who met inclusion criteria. Purposeful sampling is a technique commonly used in qualitative research which involves intentionally

identifying individuals that are knowledgeable about a phenomenon of interest. This allows for the selection of cases that are rich in information for the most effective use of limited resources (Palinkas et al., 2015). Snowball sampling is a nonprobability method of sampling, which involves using samples that are selected by the researcher. This type of sampling also falls under a convenience sampling method, which includes members of the population that are available to the researcher. Snowball sampling is a method that occurs when study participants recruit future participants from their acquaintances (Naderifar et al., 2017).

In this study, emails to SLPs previously known were sent out to recruit participants. Those participants then referred us to other potential participants. Interested participants were given the study criteria and commitments prior to the commencement of the study. In order to participate in the study, individuals were required to: (a) speak English, (b) live in the United States, (c) have a master's degree in Speech-Language Pathology, and (d) provide literacy instruction to one or more individuals who used AAC. Interested participants were required to consent to participating in a virtually conducted and audio recorded interview.

In total, 19 SLPS accepted participating in this study. SLPs participated in a virtually conducted and audio recorded interview. This paper, meeting a school milestone, was randomly assigned to 9 of 19 SLPs to report and summarize findings.

Table 1 displays demographic information for the 9 SLP participants and their caseload. First and last name initials were given to all participants to protect confidentiality. All SLP participants have earned a Masters in Speech-Language Pathology or Communication Sciences & Disorders. 1 SLP participant was also in the process of getting their master's in special education. SLPs worked a mean of 3.83 years prior to participating. 4 SLPs have been working as an SLP for more than 3 years, and 5 SLPs have been working for 3 years or less. Each SLP

had children using AAC in their caseload. For 7 of the 9 SLPs, more than half of their caseload

consisted of children who use AAC. Each SLP had taken a course in AAC in their

Undergraduate and/or Graduate education. One SLP explicitly reported attending a number of

CEUs in the area of AAC. 8 of 9 SLPs had some coursework in literacy in their Undergraduate

or Graduate education. The average total caseload was 33 students. The average total number of

students who use AAC in the SLP's caseload was 19 students. Participants LK, ML, NE, and SJ

only have students working with AAC on their caseload.

**Table 1**

*Demographic Information of SLPs Interviewed for Study 2*

| Participant Initials | Highest Degree Earned | Years of Work as SLP | Coursework in AAC | Coursework in Literacy | Caseload Description (Total # and Total who use AAC) |
|---|---|---|---|---|---|
| KL | M.S. in Speech-Language Pathology | 8 years | 4 credit Graduate Course | 4 credit Undergraduate Course; 1 credit Graduate Course | Total: 28 Who use AAC: 18 |
| KT | M.S. Communication Sciences & Disorders | 3 years | 1 AAC Course | General Literacy in Graduate Courses | Total: 52 Who use AAC: 3 |
| LK | M.S. Communication Sciences & Disorders; M. Ed. in progress (2021) | 8 years | 1 AAC Graduate Course; 2 AAC & Literacy CEUs | Several Graduate Courses; Practicum Placement | Total: 25 to 35 Who use AAC: 25 to 35 16 Contract Consults throughout year |
| ML | M.S. Communication Sciences & Disorders | 3 years | 1 Undergraduate Course; Graduate School; Colloquium | General Literacy in Courses; Nothing Specific to Literacy | Total: 12 to 13 (6 participating virtually) Who use AAC: 12 to 13 |
| NE | M.S. Communicati | 2 years | 1 Undergraduate Course; 3 | 1 Graduate Course | Total: 28 Who use AAC: 28 |

| | | | AAC Graduate School Courses | | |
|---|---|---|---|---|---|
| NR | M.S. Communication Sciences & Disorders | 6 months | 4 AAC Courses | 1 AAC Literacy Course | Total: 22 Who use AAC: 21 |
| SF | M.S. Communication Sciences & Disorders | 4 years | Graduate Course | Embedded in Coursework | Total: 55 Who use AAC: 13 |
| SJ | M.S. Communication Sciences & Disorders | 5 years | 1 Graduate Course; 20-30 CEUs | Multiple Courses; Graduate School Clinic Experience | Total: 12 Who use AAC: 12 |
| VS | M.S. Communication Sciences & Disorders | 1 year | Courses, Seminars | Seminars | Total: 56 Who use AAC: 32 |

*Note.* M.Ed.= Master's Degree in Special Education; SLP= Speech-Language Pathologist; M.S.= Master's Degree; CSD= Communication Sciences and Disorders; IP= Degree in Progress

Table 2 displays literacy curriculum experiences for the 9 SLP participants. 8 of 9 participants have a literacy curriculum that their school uses. All SLPs indicated that the students they work with who use AAC do have literacy goals. For more than half of the participants, the teacher (including special educator) is the one who approves the literacy curriculums. For 7 of the SLPs, the general education teacher or administration approves the literacy curriculum for the school and their students with CCN. For 3 of the SLPs, a literacy specialist or SLP approves the literacy curriculum. 6 SLPs did receive training for literacy/literacy curriculums in graduate school.

**Table 2**

*Literacy Curriculum Experiences*

| Participant Initials | Literacy Curriculum the School used for CCN | Training provided on that specific curriculum | Who approves (selects) literacy curriculums | Literacy training |
|---|---|---|---|---|

| KL | No standard curriculum across all classrooms; A to Z; Unique Learning System; Alpha Phonics | Online/web training for Unique | SLPs and teachers | Literacy was not addressed in Graduate School |
|---|---|---|---|---|
| KT | SIPPS R with adaptations (or limited participation) | Learning from trained Resource Specialist (RSP) | RSP teacher (who is the case manager for students with AAC devices) | Did not report |
| LK | Unique Learning System; BoardMaker Online; Core First Books | Online/web training for Unique | Did not specify | Graduate courses; CEUs in the area of AAC and literacy |
| ML | Accessible Literacy Learning Curriculum; Many classrooms just use things teachers create which change teacher to teacher | Previous training on ALL | Special Education Teachers and General Education Teachers | Graduate courses focused on what typical development looks like; Graduate clinical experiences with literacy and CCN; CEUs |
| NE | We created our own thing that included PowerPoints during morning circle and multiple teachers use this; Unique Learning System (more in distance learning); | Online/web training for Unique | Literacy Specialist & SLP | Graduate school covered adapted literacy extensively |
| NR | Unique Learning System; Edmark; ALL curriculum | Online/web training for Unique Graduate training for ALL | SLP & Teachers | Graduate school covered adapted literacy extensively; CEUs |
| SF | Edmark | Did not report | Special Education teacher; School district/school board | Graduate courses focused on what typical development looks like with references to some literacy milestones |
| SJ | No specific literacy program, each classroom teacher does their own thing | N/A | Classroom Teacher | Trained and able to work on literacy programs |
| VS | Reading Mastery | Attended in-person training | Administration and Teachers | Graduate clinical and course experience with AAC and literacy |

*Materials*

During the interviews, SLP demographics were obtained from participants through a demographic questionnaire. A light script (See Table 3) was used to structure the SLP interviews. The goal of the questions in the interview guide was to help pursue answers to gaps in research for recent work in literacy and AAC.

**Table 3**

*Interview Questions*

| Questions |
|---|
| 1) What makes a curriculum acceptable? |
| 2) What makes a curriculum feasible? |
| 3) What makes a curriculum adoptable? |
| 4) What makes a curriculum appropriate? |
| 5) What makes it that you can implement a curriculum with high fidelity? |
| 6) What fosters sustained use of a curriculum? |

After questions were developed, the interview guide was shared with two researchers: one with expertise in the field of CCN and AAC, and one in the field of qualitative methods. The researcher with expertise in CCN and AAC aided in determining question order and probes that would be necessary to help participants provide more detailed responses. The qualitative methods researcher helped the first author to consider the wording of questions to ensure participant elaboration and methods for member validation. Then, an SLP who had 10 years of experience of working with children using AAC had field tested the interview questions. Based on feedback from the researchers and field testing, the questions were modified to adjust the wording and question order, as well as include specific probe examples that would help the researcher to pursue a participant's response further for elaboration or clarification.

*Procedure*

Interviews were scheduled with SLP participants through email at a time that was convenient for both the SLP and first author. The first author had experience working with children who use AAC and implementing literacy instruction with these individuals. Therefore, all interviews with SLPs were conducted by the first author. The interviews were conducted over Zoom, and they averaged 31 minutes in length with a duration ranging between 23 to 46 minutes. The first author asked a set of questions, allowed the participant to speak, and then asked follow-up questions. The interviewer followed a semi-structured interview process to ensure that data collection was systematic, but also allowed for thorough responses from the interviewee. Probes were used to ask for more detail, elaboration, and clarifications in the interviewees' responses. The interviews were conducted and recorded using Zoom. Audio recordings were transcribed by Zoom. Transcriptions were then unitized and cleaned up by 5 undergraduate research assistants (RAs).

RAs accessed the written transcription of the interviews via Zoom and entered it onto an excel sheet. Each question asked within the interview had its own excel cell. This data was then organized by pairing the question cell to the responses that included the corresponding answer to that question. Each answer cell was unitized on the excel sheet. Unitizing data on the excel sheet consisted of separating the qualitative data into smaller units that eventually established category-sets for later classification (Guetzkow, 1950). The unitized data on the excel sheet was then cleaned up for grammatical errors, repetitions, and for the discrepancies within the audio to written transition via Zoom. After unitizing and cleaning it up, the research team thematically coded the qualitative data using a created code book. Thematic coding is a method for identifying, analyzing, organizing, describing, and reporting themes found in a data set (Nowell et al., 2017). Detail regarding the data analysis process is written below.

**Chapter 4**

**Data Analysis**

Data analysis in this study was in the form of a thematic analysis. Thematic analysis is a method of analyzing qualitative data for seeking to understand experiences, thoughts, or behaviors. In addition to describing data, this method involves interpreting the qualitative data to constructing themes and select codes (Kiger & Varpio, 2020). These codes were then organized into a codebook for the study.

The process for conducting thematic analysis in this study consists of five steps: (1) familiarizing and identifying initial ideas, (2) unitizing and organizing text, (3) developing initial codebook and coding data subset, and identifying and defining themes, (4) coding data and assessing reliability, and (5) resolving discrepancies and sorting data. Figure 1 shows the six steps of the data analysis process as a visual. The data analysis process in this study was executed by a team, including the first author, Master's students, and trained RAs. The intention of the thematic data analysis process in this study was to find patterns within the SLP participant's qualitative data (interviews).

**Figure 1.** Data Analysis Process
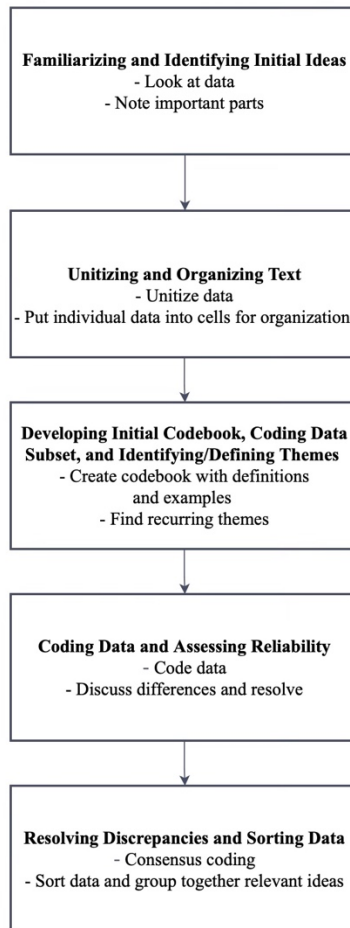


*Familiarize and Identify Initial Ideas*

The data analysis process began with the research team reading the Zoom interview transcripts to familiarize themselves with the interview data. Each member of the research team was assigned certain transcripts to read over. The RAs had been trained on this part of the data analysis process during the weekly team meetings. RAs had also read over the interview transcripts to initially notice and identify patterns. Codes and themes resulting from patterns are looked at closely later in the data analysis process.

*Unitize and Organize Text*

The second step of the data analysis process started with unitizing the Zoom interview transcriptions. Unitizing data refers to "separating the qualitative material into units" (Guetzkow, 1950). The data from each interview was transcribed onto a separate Excel spreadsheet. The interview data in this study followed a question-response pattern of being unitized (Guetzkow, 1950). The Excel spreadsheet was organized so that the question being asked was written in column A, the answer was written in column B, and the unitized and organized answer data was in column C. When data for the response consisted of many topics, the data was broken down into multiple units. Unitizing the data into separate thought units helped later in the process for identifying and classifying codes. In this study, each interview spreadsheet was assigned to two RAs. Both RAs read over the raw interview data and pasted the data into column C to unitize and correct transcription mistakes.

*Develop Initial Codebook and Code Data Subset & Identify and Define Themes*

The third step of the data analysis process consisted of developing the initial codebook and coding the data subset. The codebook was designed using an a priori framework analysis, using Proctor's (2011) implementation science framework. An a priori coding scheme consists of coding qualitative data using pre-determined codes based on a theoretical framework, interview questions, or pre-existing knowledge (Stuckey, 2015; Stefaniak, 2020). In this study, the codebook was pre-determined using implementation variables (e.g., adoption, acceptance, sustainability, fidelity) as a framework. The overall objective of a framework analysis is to identify, describe, and interpret key patterns within and between themes about the topic of interest (Goldsmith, 2021).

The themes were developed based on themes within Proctor's (2011) article, including :

acceptability, feasibility, adoption, appropriateness, fidelity, and sustainability. Additionally,

after reviewing research related to these implementation variables and the data, the research team

created key words and meanings (our own definitions of the implementation variables) to help

code the data. Table 4 describes each theme used in this framework analysis.

**Table 4** Summary of Themes

| Themes & Subthemes | Definition from Proctor et. al, 2011 | Our definition |
|---|---|---|
| 1 - Acceptability | "...the perception among implementation stakeholders that a given treatment, service, practice, or innovation is agreeable, palatable, or satisfactory." | • Positive experience, values/thoughts/beliefs, meaningful satisfaction |
| 2 - Feasibility | "...the extent to which a new treatment, or an innovation, can be successfully used or carried out within a given agency or setting." | • Practical and practicable, suitable, logically makes sense |
| 3 – Adoption | "...the intention, initial decision, or action to try or employ an innovation or evidence-based practice. Adoption also may be referred to as ''uptake.''" | • Uptake, implementation, trying something |
| 4 - Appropriateness | "...the perceived fit, relevance, or compatibility of the innovation or evidence based practice for a given practice setting, provider, or consumer; and/or perceived fit of the innovation to address a particular issue | • Does it fit in?, relate to context of instruction |

| | or problem." | |
|---|---|---|
| 5 - Fidelity | "...the degree to which an intervention was implemented as it was prescribed in the original protocol or as it was intended by the program developers." | • Quality assurance, delivered as intended |
| 6 - Sustainability | "...the extent to which a newly implemented treatment is maintained or institutionalized within a service setting's ongoing, stable operations." | • Long term, sustainable |
| 7 – Other | N/A | • Unrelated |

*This study does not focus on these themes

*Code Data*

The primary researcher reviewed the codebook with the research team by discussing the major themes within the codebook. Each member of the research team independently coded a subset of interview data, and the primary researcher facilitated weekly meetings to discuss the coding process. The research team compared the codes assigned and sorted through to determine what was acceptable to use. This allowed the team to provide feedback on the codebook in order to refine it and complete the final coding process.

*Resolve Discrepancies and Sort Data*

Discrepancies in codes were resolved through discussions in weekly meetings until a consensus for the final code was attained. For example, the research team discussed whether the data and codes assigned to them were truly acceptable or adoptable. The interview data were sorted in Microsoft Excel spreadsheets, with the code written next to the unitized data it correlated with for ease of coding.

**Chapter 5**

**Results**

      The results are presented according to six themes: acceptability, feasibility, adoption, appropriateness, fidelity, and sustainability. Themes and definitions are summarized in Table 3.

*Acceptability*

      SLPs discussed the acceptability of implemented AAC literacy programs in their schools. SLP NR describes how she has a positive experience with the Unique Learning curriculum, mentioning that it was "helpful for this distance learning thing because they have all the lessons [premade for the SLPs]", so SLPs can assign a specific lesson to an individual that they see fit with the student's goals.

      SLP NR and SLP ML also discuss how training is necessary for acceptability to occur. For example, SLP ML mentions, "training with video examples [would be helpful]...actually seeing it be used with kids with disabilities is what [educators] need." SLP NR also agrees, saying that "people just need to be shown how to do it, like, step by step...there needs to be something that's telling them exactly how to do it...like a data sheet."

*Feasibility*

      SLPs discussed the practicality and practicability of implemented AAC literacy programs in their schools. SLP SJ described how the feasibility of finding and presenting the lessons would be practical for teachers using these programs. For example, SJ described how, "Anything that's online that...you could go in and print out pretty easily and say...this is my lesson today...and tie it to the goals of the student is something that would be very practicable.

SLP NE shared a similar idea, in terms of practicality, by explaining that "providing materials for teachers so that they don't have to then spend 10 hours on their weekend making material" would be beneficial. SLP NR described that a guide would be helpful for teachers to put these literacy programs in practice in the classroom. SLP NR stated: "People need to be shown how to do it step-by-step, like, there needs to be something that is telling them exactly how to do it and a data sheet already made…". She explains her idea that "...[it needs to be] super simple, [such as] a binder and a script and everything pre made [with] a data sheet in the back…[so that teachers] don't have to make anything."

SLP KS's response also supports the previous responses, arguing that "…it would be easier if there's a super set lesson plan, ...something that can be fit into a short amount of time." She further discusses, "even if [the teacher has] a 30 minute plan… having [something] pre-planned for [them makes it more feasible to implement a lesson]."

*Adoption*

SLPs talked about the adoption of implemented AAC Literacy programs. The topic of adoption includes discussion about the uptake or implementation of the program. Some schools report a predetermined curriculum being selected for everyone and then being told to use it. For example, SLP NR mentions, "[the school] adopted Unique [Learning curriculum] because they're forced to use it... throughout the school year [SLPs] are pretty much required to use it."

Other special educators report having more freedom around using different curriculums. Although this could be a positive, many have reported challenges to this liberty as well. SLP LK mentions that it may be nice "having something that is already adapted [for AAC users]" because it's "so time consuming" for different programs. "Even if [the SLPS have to] adapt [the

curriculum] further or set up a different batch of symbols for a kid...it's a huge time saver [to have a program already picked out], even if they don't have to do that for every single kid in the class." SLP SJ describes the picking out the program as, "it's kind of whatever [the SLP] wants to do."

When speaking on why an individual adopts the program, SLP SJ mentions that "people like things that are easy." She believes that people's reasoning is as follows: "people think that when things are packaged all together, that it must be good because...who would put all of that time and effort into packaging something if it weren't good?"

*Appropriateness*

SLPs discussed the appropriateness of AAC Literacy programs in the schools. They spoke on whether the curriculum "fits in" or relates to the context of instruction and/or the situation. SLP LK describes that "One of the biggest pieces...with Unique Learning [is that it's] aligned to certain common core standards. So they have their built-in justification for [why students are] learning about this." SLP NE also discusses that "[the things that have been successful with our school] include things that are user friendly...The simpler [the prep is and the way the curriculum] can be presented the teachers, the more likely it is that you're going to walk into a classroom and see it happening."

*Fidelity*

SLPs discussed the quality assurance of selected AAC Literacy programs in the schools. They spoke on whether the curriculum was delivered as intended. For example, SLP SF explained that in her school, the district "probably [relied] a lot on the special ed teacher to create those programs for them, [and she doesn't] think that they do it with fidelity."

*Sustainability*

SLPs discussed what is needed for sustainability and/or long-term effects of the implemented AAC Literacy programs in their schools. SLP NR discussed how it "would be incredibly beneficial [to have] someone [come] in and [give] the background of everything" to help with sustainability of the program. She continued to describe what she thought would be necessary for long term sustainability: "...for somebody to like observe in a classroom and then see how they can implement literacy and how easy it is and then give tips and then...[show others what to do]." SLPs like SLP SJ believe that "in order for [them] to sustain something, [they] just have to be motivated by it." SLP SJ also mentions that "people revert to [a program that] they know and to what's easy because sometimes the day is really hard...if you have something that's easy, and it's something that's consistent...then [it] becomes part of the routine and it's easy to [think that it's] working [and that they're making a] difference versus [not doing] anything."

Consistency was a topic that SLP ML mentioned in terms of sustainability of programs. SLP ML describes that she's "...looked at a lot of different curriculums specifically with [her] last school [and she saw that one teacher is] Wilson reading trained and [the other] is this trained in ALL or has no training. So, the student moves from program to program [and] from teacher-to-teacher, so they're getting different trainings, different theories, and that doesn't benefit the student." SLP ML emphasizes that "the student needs something consistent" for the program to be sustainable in a school.

Motivation was an important topic that SLPs talked about in terms of sustainability of a AAC Literacy program. For example, SLP NE discussed her belief regarding what would be best for maintenance and motivation when using these programs: "If there's a way to consistently track student progress...that's always a good motivator." She further describes her idea that, "if

you can see, over a 6 month period of time, the student has learned all of this stuff and now they

can read three letter words…that's real progress…that's the way to maintain people doing it."

**Chapter 6**

**Discussion**

*Summary*

Participants described the positive experiences of premade lessons for SLPs and indicated that training is necessary for acceptability to occur. Participants also spoke on the feasibility of programs, discussing that easily accessible online resources are beneficial. Providing materials for teachers, instead of having them create it themselves, helps with feasibility as well. One participant reported that the adoption of programs can be dependent on what the school system chooses. It was also reported that some special educators may have more freedom to use different curriculums than the school system recommends, and many times the educators choose what is easiest for them to implement. In terms of appropriateness, literacy programs that align with school standards and have simple prep work are deemed appropriate and more likely to be easily implemented. One participant also described their experience that their special education teacher was responsible for creating the literacy program for the students, and she believed the program was not delivered as intended. Lastly, having someone explain the background of the program, having the ability to observe someone implementing literacy, having consistency between programs, and tracking progress to show motivation, are all ideas that SLPs reported in terms of making a program sustainable. The results will be discussed in the context of Nevenglosky and colleagues (2018) article highlighting main areas of consideration for implementation adoption of a new curricula. The areas of focus are curricular alignment, curricular implementation, and professional support.

*Curricular Alignment*

In accordance with Nevenglosky et al.'s (2018) article, curricular alignment is seen when "teachers choose to implement the curriculum with fidelity." Choosing a curriculum that aligns with the standards of the school allows for better acceptability of the curriculum. SLP NR agrees with this claim, explaining that she had a positive experience with the Unique Learning curriculum, since it was helpful during the distance learning standards of the school at the time. Similarly, SLP LK describes that one of the biggest pieces to Unique Learning was that it's aligned to certain common core standards; therefore, they have their built-in justification for why students their students are learning through this curriculum.

Curricular and instructional quality and teacher preparedness also influence curricular alignment (Early et al., 2014). Theobald et al.'s (2022) study highlights "the importance of alignment between teacher preparation and K–12 literacy instructional practices for the reading achievement of students with high incidence disabilities." SLP NR and SLP ML agree that training is necessary for acceptability to occur for these literacy programs. SLP ML goes into detail, mentioning that training videos and seeing how to properly implement the program, will allow for better acceptability and fidelity.

*Curricular Implementation*

According to Nevenglosky et al.'s (2018) article, curricular implementation "refers to how teachers deliver instruction and assessment through the use of specified resources provided in a curriculum." Curricular implementation can involve providing instructional suggestions, scripts, lesson plans, and assessment options related to a set of objectives, which allow for consistency to help teachers maintain curricular structure (Wiles & Bondi, 2014). These items would be very helpful for teachers, considering teachers may be unaware of strategies to provide grade-aligned literacy instructions to those with disabilities (Ruppar, 2017). SLP SK and SLP SJ

in this study describe that when there is a set lesson plan and when the lesson is easily accessible, implementation of these programs is easier. As mentioned previously, Ruppar (2017) explains that teachers have a lack of knowledge on how to educate individuals using AAC. Therefore, teachers struggle with presenting material and believing that the material will yield success. With proper implementation education and understanding of the material, teachers can successfully implement the curriculum to their students.

Nevenglosky et al. (2018) argues that "the need for teacher understanding and efficacy when implementing a new curriculum is apparent, especially considering the impact of these factors on student learning." To agree with this, SLP NR reported how it would be beneficial for someone to come in and give a background of the program and how to properly implement it to the students. Petersen (2016) supports this idea, discussing that teachers need professional development opportunities to assist them in understanding how curricular items are directly linked to their school standards, as well as helping them drive and inform instruction. Doing this "ensures access to content, activities, and materials that promote learning" (Petersen, 2016).

Supported by this study's research, instructional practices and adopted curriculums should be aligned with the specific learning goals provided by the school. According to Causarano's (2015) article, instructional practices need to align with the curriculum as well as the support of the individual needs of the students in order to implement curricula with fidelity. In agreement with what's written in Causarano's (2015) article, SLP SJ describes that tying the lesson into the goals of the student would allow for a very practicable program.

*Professional Support*

Professional support is considered necessary for teacher success and implementation of new curricula (Bakir et al., 2016). Peterson (2016) explains the importance of administrative support that leads to "consistent dissemination of information, proactive planning, and consideration of teacher needs related to resources, materials, and scheduling" (Peterson, 2016). SLP NR briefly discusses the importance of administrative support regarding needs related to resources when she describes how guides would be helpful for teachers to put these programs in practice in their classrooms. She believes that if teachers have something planned for them by a professional, it will make it more feasible for them to implement a lesson.

In addition to pre-planned materials made to support teachers, training videos would be helpful as well for implementation, according to SLP ML. Peterson (2016) explains that "demonstrating for teachers through example lesson plans, modeling instruction, and making explicit how functional or life skills may be embedded in core academic instruction would assist teachers in understanding the "how," as well as making a necessary dispositional shift toward understanding core academic instructions as...functional." Support during trainings is necessary for successful implementation and for educators to understand the reasons behind what they are doing.

SLP NR also mentions that it would be beneficial for a professional to speak about the background of the program and give tips for implementing it, which would add to an educator's knowledge to aid in successful implementation.

*Clinical Implications*

By evaluating implementation outcomes through an implementation science framework, this project is trying to identify factors before developing programs. Important sticking points have been identified in the past and basing future development needs are necessary in

conjunction with this. What these SLPs, teachers, and other educators say need to be taken into consideration in order to create and adapt successful curricula.

*Limitations*

This study revealed information regarding potential and necessary AAC curricula adaptations to be made; however, there were a few limitations that warrant consideration in this study as well.

First, it is important to consider the small sample size included in this study. Due to the small sample size, there is less generalizability. The population included may not be representative on a large scale of SLPs' perspectives on AAC curricula in the school system. Demographic information, such as economic and cultural backgrounds, of the participants were not disclosed as well. Information about the support of the students was also not included in this study. These factors may affect the interview data received in this study.

Themes not being mutually exclusive may pose as another limitation in this qualitative thematic analysis. Some of the interview data can fit into more than one theme; however, it is only represented as one theme in the final project. This may occur because some themes are broad and include a wide range of criteria (Munthe-Kaas et al., 2019). This can also occur when interviewees may mention topics in their answer that would include more than one theme.

**Chapter 7**

**Conclusion**

This study reported the perspectives of 9 SLP's thoughts on AAC curricula in the school system to improve special education literacy services. SLPs reported that background on the program, training, and observations of the program being implemented would be beneficial for implementation. They also reported that literacy programs that align with school standards, have little prep, and have easily accessible resources, are beneficial. Overall, using implementation science is an important piece in improving AAC literacy curricula. A better understanding of literacy implementation variables, such as what factors make literacy curriculums adoptable and accessible to those implementing, were important ideas considered in this study. Using an implementation science framework can help guide accommodations and adaptations to these curricula, thus allowing for potential solutions to barriers written previously. By implementing changes to extrinsic factors, such as teacher preparation and access to adapted literacy materials, the implementation of AAC literacy curriculums may happen with more ease, which may help with AAC literacy rates. Ultimately, future research and development regarding adapted literacy instruction can potentially yield an acceptable and adoptable curriculum that has sustained uptake and high-fidelity instruction across classrooms and districts. This implementation science challenge has the potential to improve the lives of many individuals using AAC.

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# ACADEMIC VITA

## Education & Credentials

The Pennsylvania State University - Schreyer Honors College, University Park, PA

Bachelor of Science in Communication Sciences & Disorders

Minor in Human Development & Family Studies

Awards: Dean's List (2019-2022), President's Freshman Student Award (2020), The Evan Pugh Scholar Junior Award (2021)

Relevant Trainings: First Aid Mental Health Certification

Honor Societies: Phi Kappa Phi, HHD (Health & Human Development) Honors Society


## Research Experience

Dr. Jessica Caron's Augmentative & Alternative Communication and Literacy Lab -

Research Assistant                                                         Fall 2021-Present

- Writing an honors research paper about an ongoing phenomenological qualitative research study within the lab o The study focuses on school Speech-Language Pathologists' experiences with AAC and Literacy in the classrooms.
- Working in a team setting in the AAC-literacy lab, screening and organizing interview data, giving an overview of the study process
- Researching thematic coding and assessing reliability for ongoing projects while simultaneously assisting with development of AAC books for the community

Dr. Michelle Newman's Laboratory for Anxiety and Depression Research – Research Assistant
                                                                  Spring 2020-Spring 2021

- Played a key role in screening journal articles for mindfulness and cognition meta-analysis
- Duties included recruiting participants and gathering ample amounts of data for a graduate student's PhD dissertation study
- Given certain criteria, organized and rated individuals on the Silver Cloud program
- Strong communication and collaboration were needed to work with internal and external teams


## Observation/Shadow Hours

Theraplay, Inc. - Volunteer/Observer                                       Summer 2022

- Worked closely with speech therapists in assisting clients ages 6 months to 15 years old
- Helped provide spontaneous speech opportunities for clients
- Observed reports being written and conversations with clients' support teams after each session
- Contributed to the operation of a clean and well-maintained facility by bringing out, cleaning, and returning toys to ensure smooth sessions

At-Home Speech Language Pathologist- Observer                          Summer 2022

- Observed multiple home speech therapy sessions for a 6-year-old client I nannied for. The client worked on articulation of rhotic and labiodental consonants.
- Established schedules for executing speech exercises, via worksheets and other interactive methods, with the client to ensure progress
- Advocated for the client by reporting what was ideal for her attention and motivation based on her achievement mindset and personality

**Teaching Experience**

Introduction to Articulation & Phonological Disorders (CSD442) - Teacher's Assistant -

Spring 2022

- Duties included monitoring lectures, holding office hours for all university students, and acting as first point of contact when dealing with student correspondence in relation to course material and technical computer issues
- Leveraged expertise in course content to closely track student progress and material needed

The Learning Experience – Teacher's Aide                          Summer 2021

- Oversaw care for 6 children at a time, providing lesson plans and performance of each child on a weekly basis
- Adeptly managed each child's pick-up times, food schedules, and napping schedule while recognizing and being able to address the challenges to successful communication interactions between children
- Conducted supervisor self-assessments to identify strengths as well as areas that need improvement.

Clinical Phonetics (CSD311) - Teacher's Assistant                          Spring 2021

- Collaborated with University Professor, to coordinate/execute phonetics assignments daily and used a wide range of monitoring and assessment tools to assist staff
- Monitored lecture two times per week
- Created study and practice material for all university students

- Acted as first point of contact when dealing with student correspondence in relation to course material and technical computer issues

## Volunteering

The Penn State IFC/Panhellenic Dance Marathon (THON) - Volunteer            Fall 2020-Present

- Evaluate dancer needs and assist them in staying physically, emotionally, and mentally fit throughout THON weekend
- Collaborate with committee members and partnered overlapping committee members to problem-solve issues

Volunteers in Public Schools (V.I.P.S.) Tutoring Center - Tutor            Fall 2021-Spring 2022

- Taught concepts of general math and science to middle and elementary school students weekly
- Duties included providing study tools and tips to ensure academic success


## Clubs & Organizations

Health & Human Development Honors Society– Member            Fall 2022-Present

HHD Alumni Mentoring Program– Mentee            Spring 2021-Present

- Gaining professional insight and networking skills from interacting with practicing SLPs and other professionals in the field

Sign Language Organization– Member            Fall 2021-Present

National Student Speech-Language-Hearing Association – Member            Spring 2020-Present